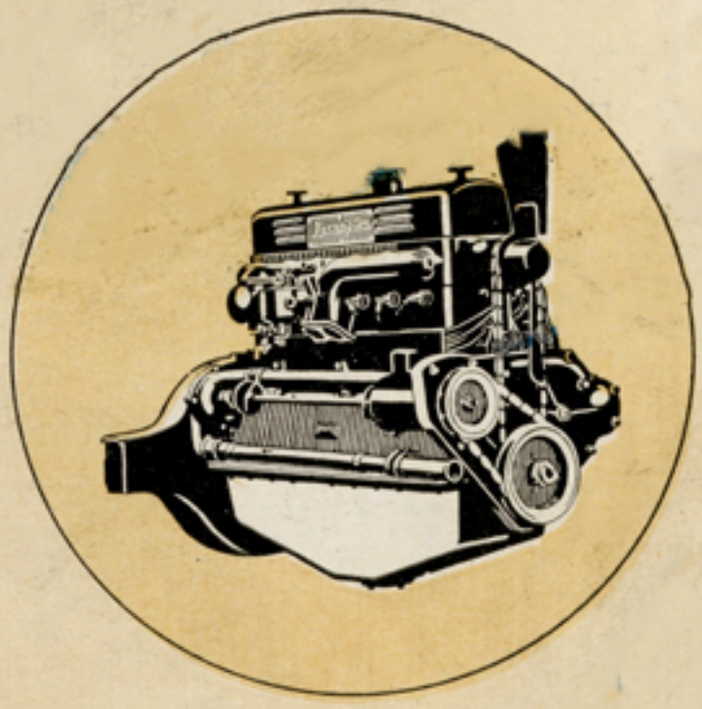


DJP
WORKS OF HISTORICA
CONNERSVILLE · IN ·

DJP
WORKS OF HISTORICA
CONNERSVILLE - IN

THE

ANSTED ENGINE

DESIGNED AND BUILT
ESPECIALLY FOR

LEXINGTON
MOTOR CARS

PIKES PEAK TROPHY
WON BY LEXINGTON WITH
AN ANSTED ENGINE

DJP
WORKS OF HISTORICA

LEXINGTON MOTOR COMPANY
CONNERSVILLE, INDIANA
U.S.A.

COPYRIGHTED NINETEEN-TWENTY
LEXINGTON MOTOR COMPANY
CONNERSVILLE, INDIANA
U · S · A ·

Prepared by
CHESTER S. RICKER
Automotive Engineer
Indianapolis

WORKS OF HISTORICA
CONNERSVILLE, IN

OU MAY have thought the two Lexington specials that won first and second honors in the Pike's Peak Hill Climb on Sept. 6, 1920, were racing cars with specially built engines — but they were not.

These six-cylinder engines were identical in design and workmanship with those you may purchase in any current Lexington model.

Just as the athlete, after weeks of practice, demonstrates the effectiveness of his training in a few seconds during a contest, so did the Lexington specials prove the efficiency of the design of the Ansted Engine in the twenty-odd minutes that they took to climb Pike's Peak.

But in modern industry we are not so interested in individual performance as in the consistency of the entire product.

When Cleveland won the pennant on the diamond, and Harvard defeated Yale on the gridiron, last

DJP
WORKS OF HISTORICA
CONNERSVILLE IN

season, it was the proper co-ordination of the efforts of many individuals that achieved success.

Luck often enters into the success of individuals, but when a team gives uniform performance it is positive evidence of co-operation and leadership behind the individuals.

It was just such support at home that made it possible for the two Lexington drivers, in their 12½ mile climb through the clouds, over a course with 142 terrifying turns, to finish within 5 2-5 seconds of one another — far ahead of the field.

It is the same co-operation between the Ansted Engineering Company, the builders of the Ansted Engine, and the Lexington Motor Company that assures every user of a any current Lexington continued and uniform satisfaction in performance, economy, and long life from the Ansted Engine.

DJP WORKS OF HISTORICA CONNERSVILLE - IN

ANSTED ENGINES are built exclusively for Lexington cars. They are the fruit of over two years persistent development work that included thousands of miles of road, and hours of dynamometer, testing which culminated in the double victory at Pike's Peak in 1920.

This engine was designed with the object of providing greater power and economy, wider speed range, smoother and quieter operation, and longer life than is obtained in the conventional automobile engine of today.

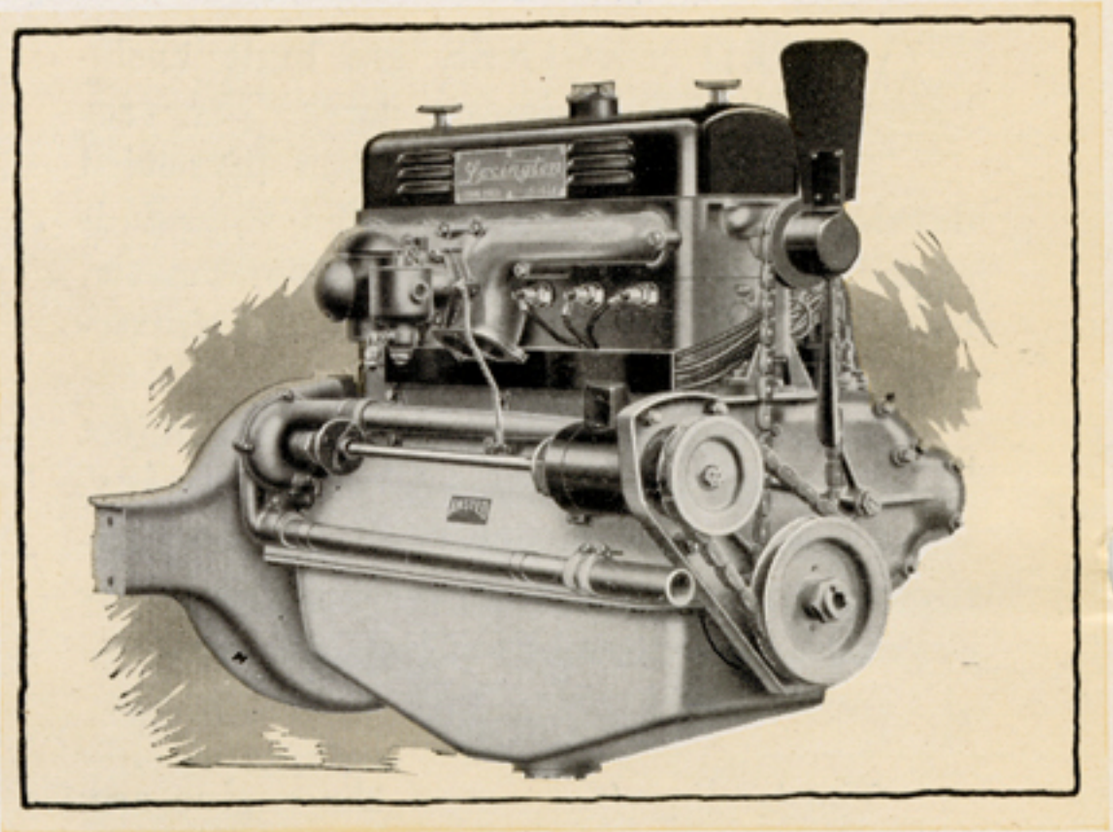
FEATURES

The leading features of the engine are: greater power per cubic inch of displacement; six cylinders with overhead valves located in a detachable cylinder head; a never-failing bearing cooling and lubricating system, automatically controlled; an unusually large crankshaft; a superior type of connecting rod; quietly operating overhead valve gear; thermostatic control of engine temperature; Moore Multiple Exhaust System, and the Lexi-gasifier. Also extreme care is taken in balancing, machining, and assembling the Ansted Engine—from start to finish!

GREATER POWER

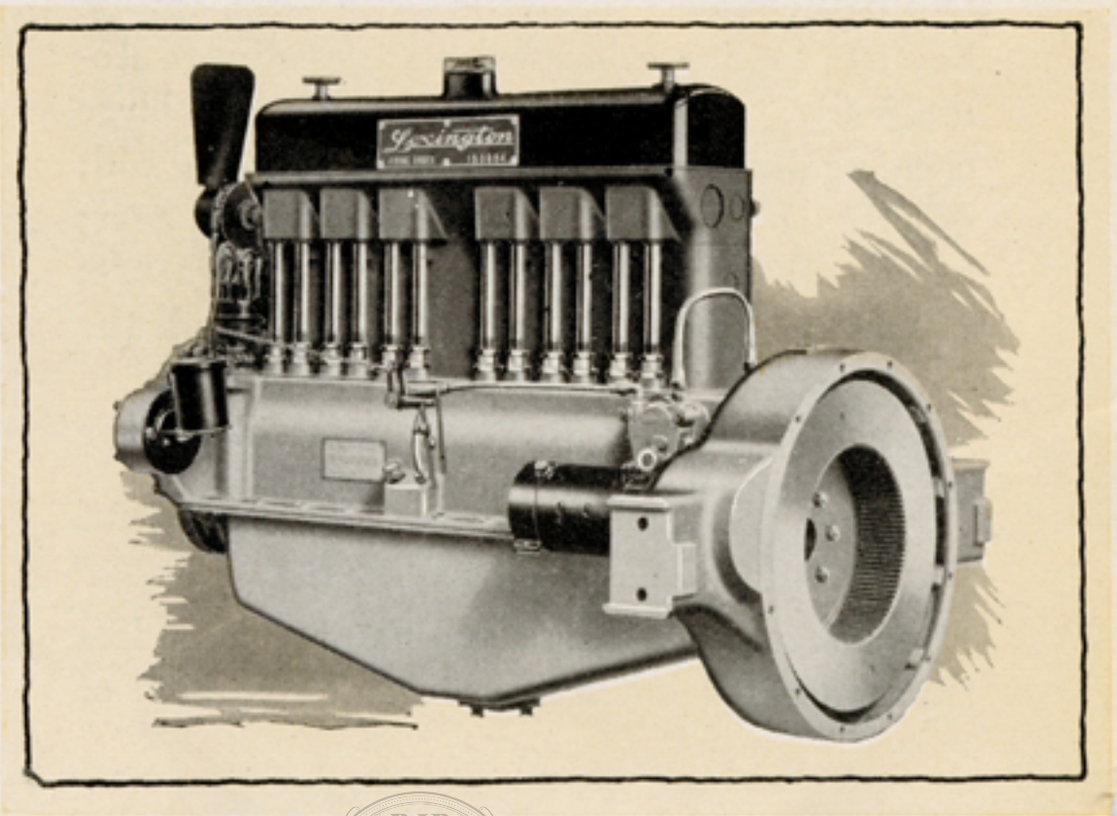
The conventional engine develops less than one-fifth horse power per cubic inch of

DJP WORKS OF HISTORICA CONNERSVILLE IN



RIGHT SIDE OF ANSTED ENGINE

Showing combined intake and exhaust manifolds



LEFT SIDE OF ANSTED ENGINE

Showing complete enclosure of overhead valve gear

CONNERSVILLE · IN ·

piston displacement, the race car about one-half, and the Ansted Engine one-third. This motor is, therefore, about fifty per cent more powerful than the average. This accounts for the excellent performance of all models in which it is mounted; having a speed range of from less than 5 to more than 60 miles per hour. It is unusually pleasing as a hill climber because of its pulling power at even low speeds and its very unusual flexibility.

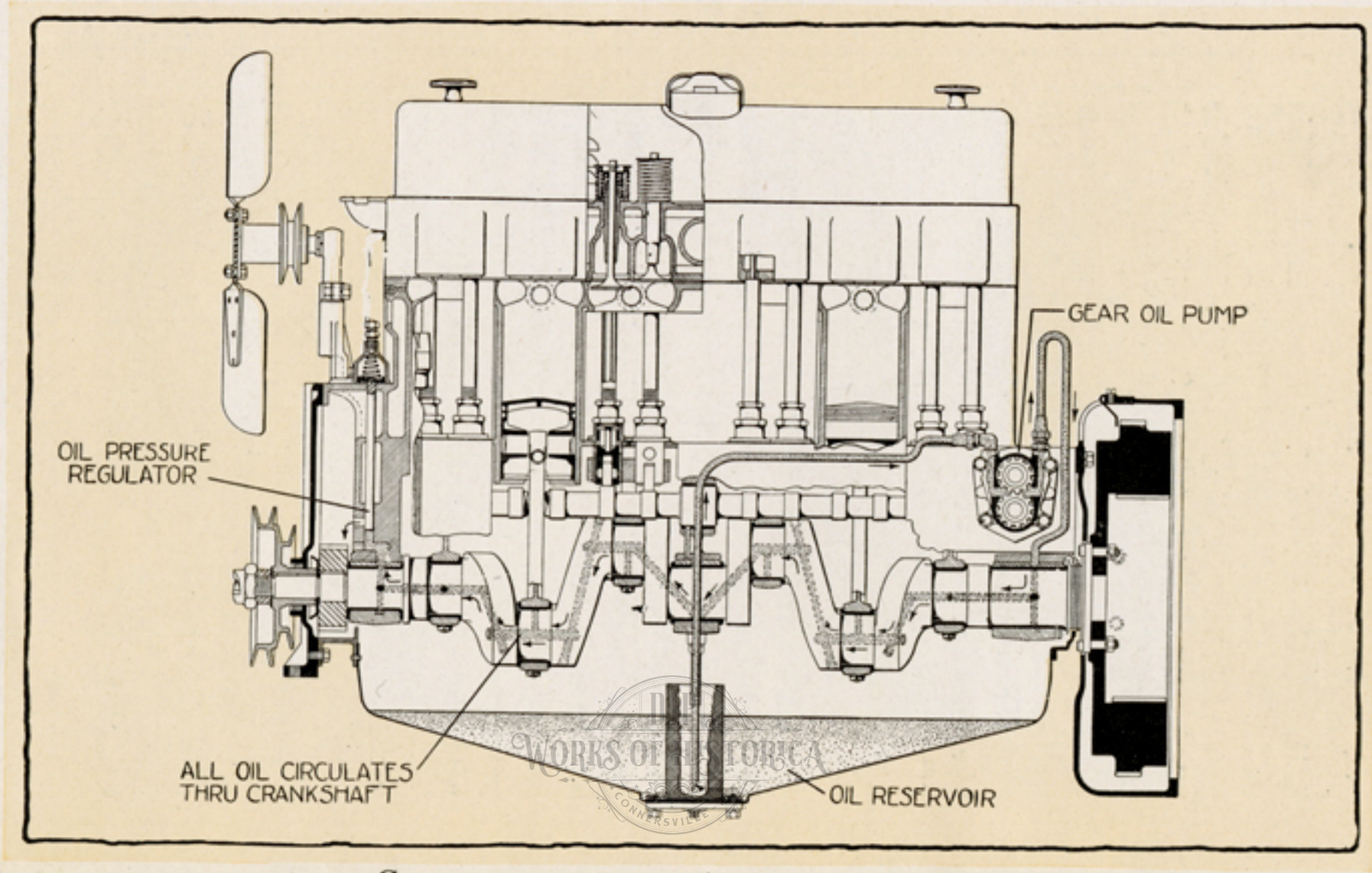
LUBRICATING SYSTEM

There are three features that distinguish the lubricating system: automatically controlled oil pressure, which varies in proportion to the work actually being done by the motor; bearing cooling, due to the circulation of all the oil through the entire length of the hollow crankshaft, and the use of grooveless and practically shimless bearings in connection with the unusually heavy crankshaft.

STIFF CRANKSHAFT

All crankshafts used in modern motors are strong enough but few of them are stiff enough to eliminate vibration at certain speeds. For a motor of this size, 2¼- and 2⅛-inch diameter main bearings, and 2¼-

DJP WORKS OF HISTORICA CONNERSVILLE, IN



Cross-section of Ansted Engine

Showing automatically controlled pressure-feed lubri[illegible]ystem

inch crank pins, are unusually large. It is therefore a stiff shaft, free from vibration. The size of these bearings, combined with the special pressure-feed lubricating system, means practically unlimited engine life if it is not abused. (See diagram opposite.)

VALVE GEAR

Unusual power is obtained by the use of overhead valves, and large valves with high lift. Valves 1¾ inches in diameter, with seven-sixteenths-inch lift (which is forty per cent more than the average) are used, and with the "rocking chair" rocker arm it is possible to use this lift without noise.

The rocker arms shown on page thirteen are at the closed and open positions of the valve, respectively. These diagrams illustrate the action of the rocker arm, which has a variable ratio so that it may open the valve slowly, at first, and then very rapidly, as it approaches full opening. This permits the valve to open quietly and to close noiselessly, although maintaining maximum opening.

SPEED RANGE

Speed range in a motor can only be obtained by perfect carburetion of the fuel, even with the most efficient design. Here is an engine that runs from 200 to 3,200 revolu-

DJP WORKS OF HISTORICA CONNERSVILLE, IN

TIRE CARRIER
Mounted on plate which forms rear frame cross member and protects rear fuel tank.

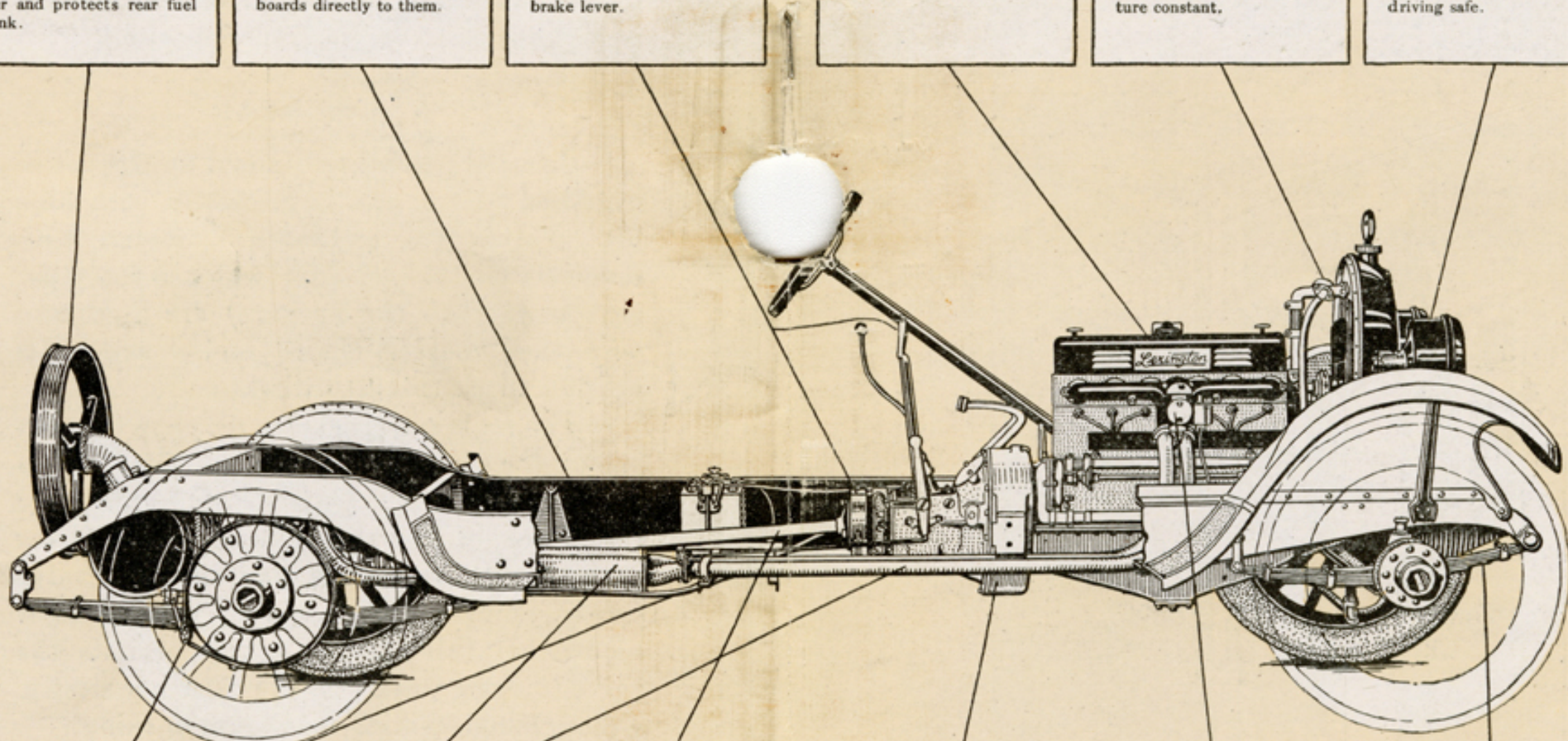
DEEP FRAME
9 inch side frame members reinforced by bolting running boards directly to them.

EMERGENCY BRAKE
On transmission. Operated with one finger emergency brake lever.

OVERHEAD VALVES
Operated by Moore "Rocking Chair" type rocker arms

TEMPERATURE REGULATOR
Maintains engine temperature constant.

2-WAY LAMPS
Vacuum operated tilting reflector lamps that make night driving safe.



SERVICE BRAKE
Operated by enclosed cables that do not rattle. Brakes on rear wheels. Pedal applied thru equalizer.

MOORE MULTIPLE EXHAUST
Two independent systems of pipes and mufflers used. One for each group of three cylinders.

PROPELLER SHAFT
Tubular propeller shaft with noiseless fabric disc universal joints at each end.

MULTIPLE DISC CLUTCH
Consists of 11 steel and 10 asbestos friction discs. Completely enclosed in flywheel housing

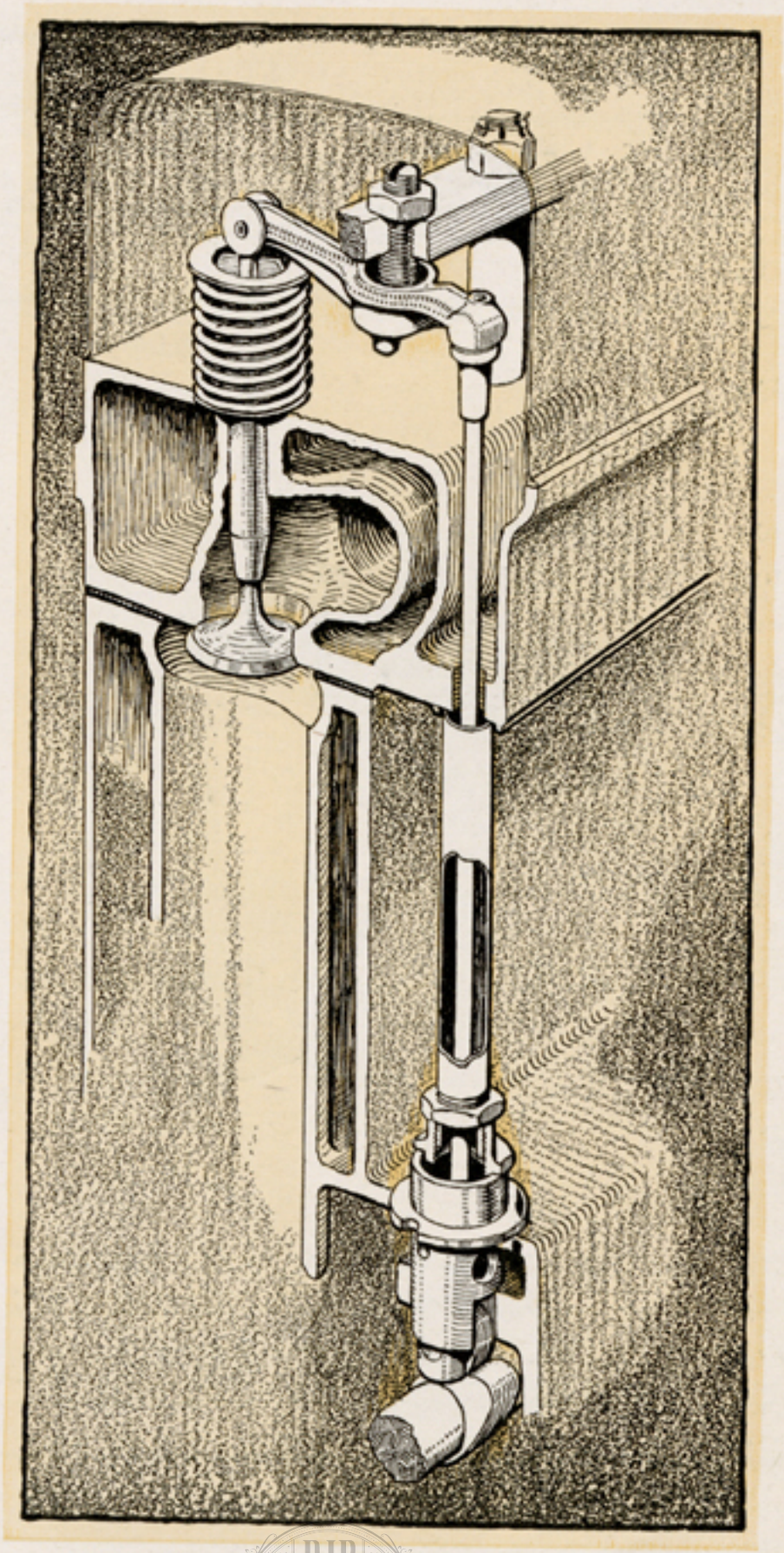
LEXIGASIFIER
Combination of intake and exhaust manifolds to get perfect carburetion.

SEMI-ELLIPTIC SPRINGS
Front, 34 inches long. Rear, 56 inches long. Both front and rear 2 inches wide.

LEXINGTON SERIES "T" CHASSIS WITH ANSTED ENGINE

Part of frame removed to show some of the exclusive Lexington features

DJP WORKS OF HISTORY CONNERSVILLE



OVERHEAD VALVE GEAR DIAGRAM

DIP WORKS OF HISTORICA CONNERSVILLE IN

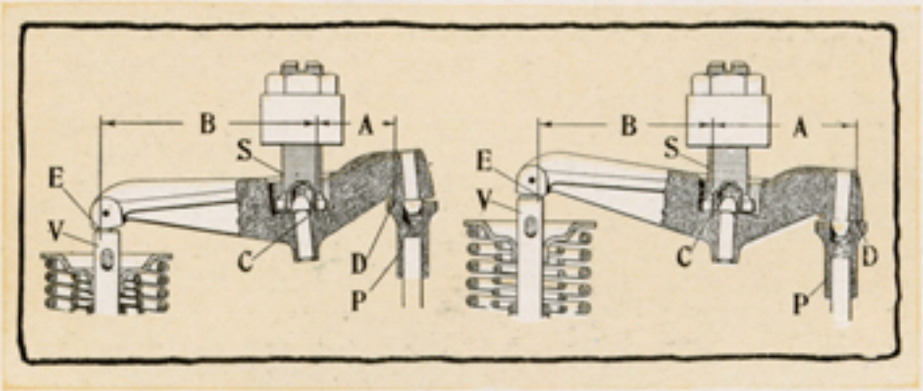


DIAGRAM SHOWING ACTION OF "ROCKING CHAIR" ROCKER ARMS

tions per minute, and has perfect carburetion! This is due to the design of the cylinder head and the intake manifold. The intake manifold has the Lexi-gasifier, and perfectly vaporizes the heavier portions of the fuel.

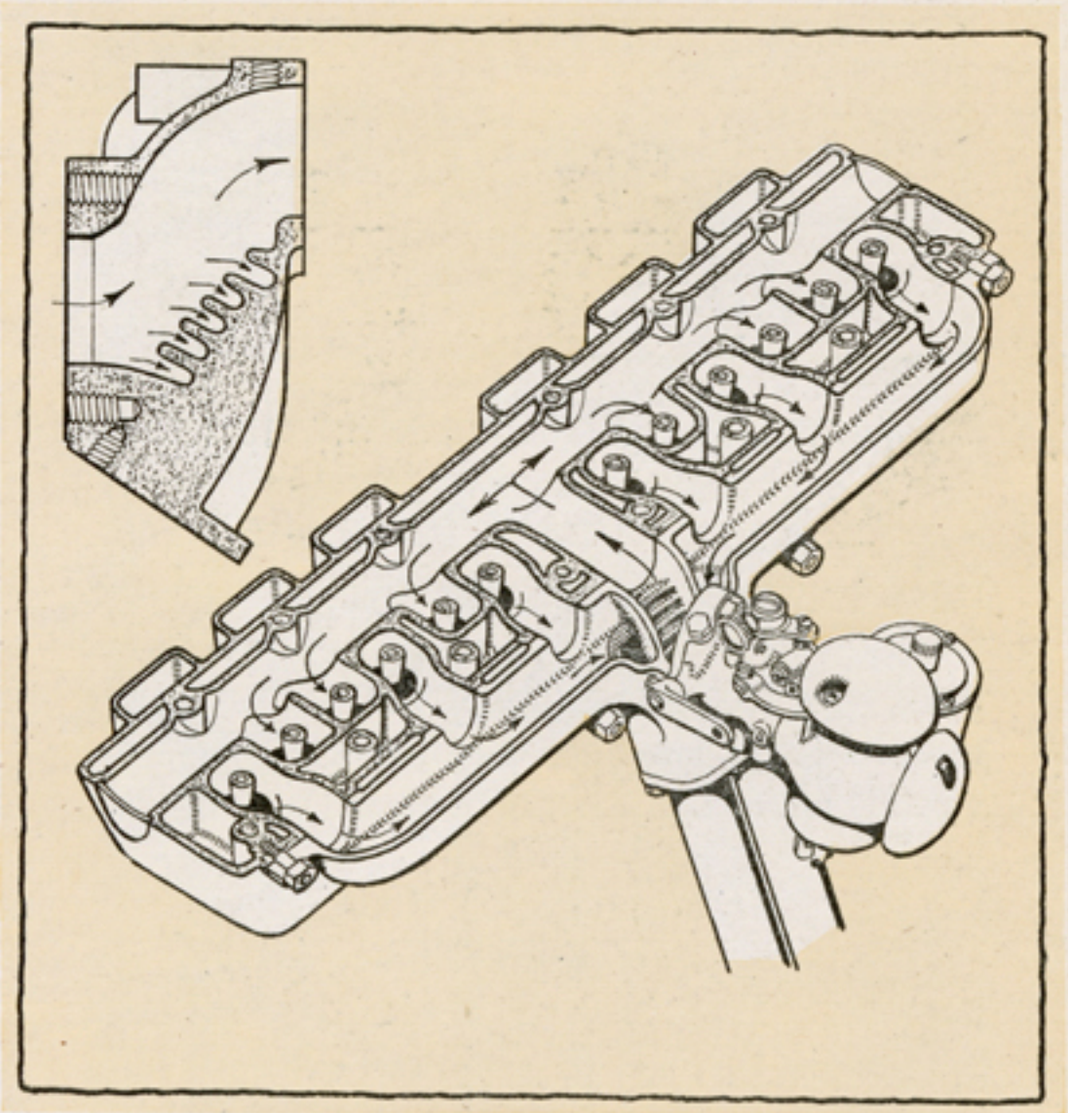
MULTIPLE EXHAUST

Scavenging of the cylinders is very important. The Moore Multiple Exhaust System is the use of separate exhaust lines from each group of three cylinders so that no two cylinders are exhausting into the same manifold at the same time. Power is increased, and with greater fuel economy.

UNIFORM COOLING

Uniform cooling temperature is almost as important as carburetion in obtaining smooth engine operation and economy. Every Ansted Engine is equipped with a thermostat. This maintains the temperature at 140°

DJP WORKS OF HISTORICA CONNERSVILLE, IN



CROSS-SECTION OF CYLINDER HEAD

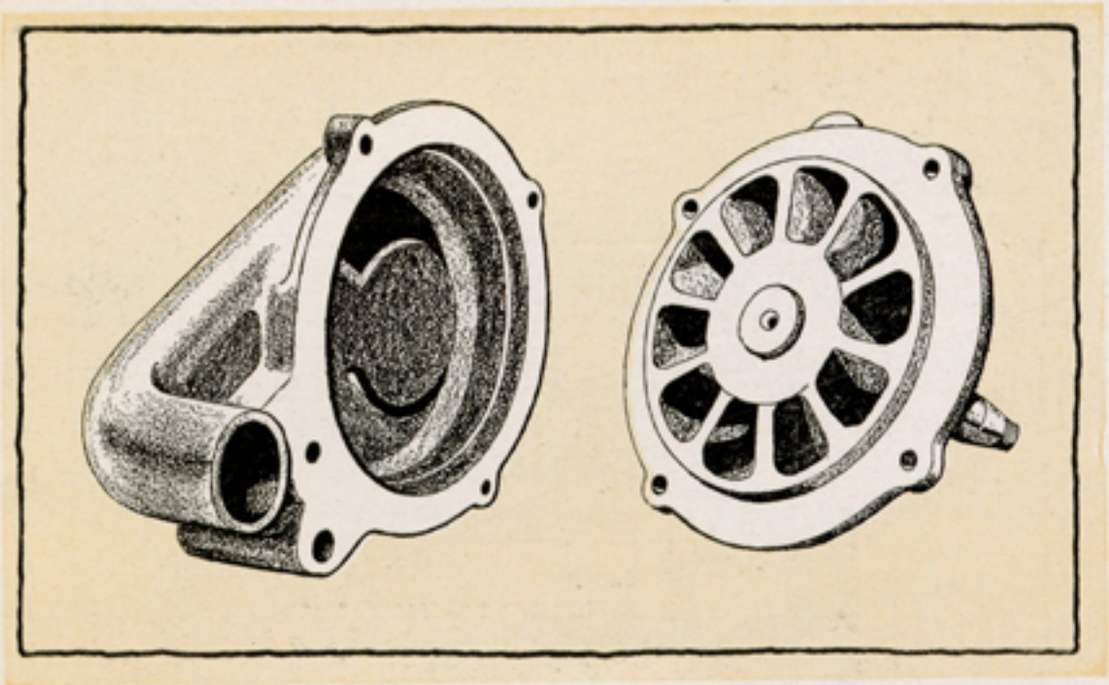
Showing Lexi-gasifier and Moore Multiple Exhaust System

Fahrenheit, which is low enough to be quickly obtained even on cold winter mornings.

ONLY TWO GEARS

There are only two timing gears used on this motor. Hence, gear noise is entirely eliminated. The water pump, electric generator, and cooling fan are all driven by steel

DJP WORKS OF HISTORICA CONNERSVILLE IN



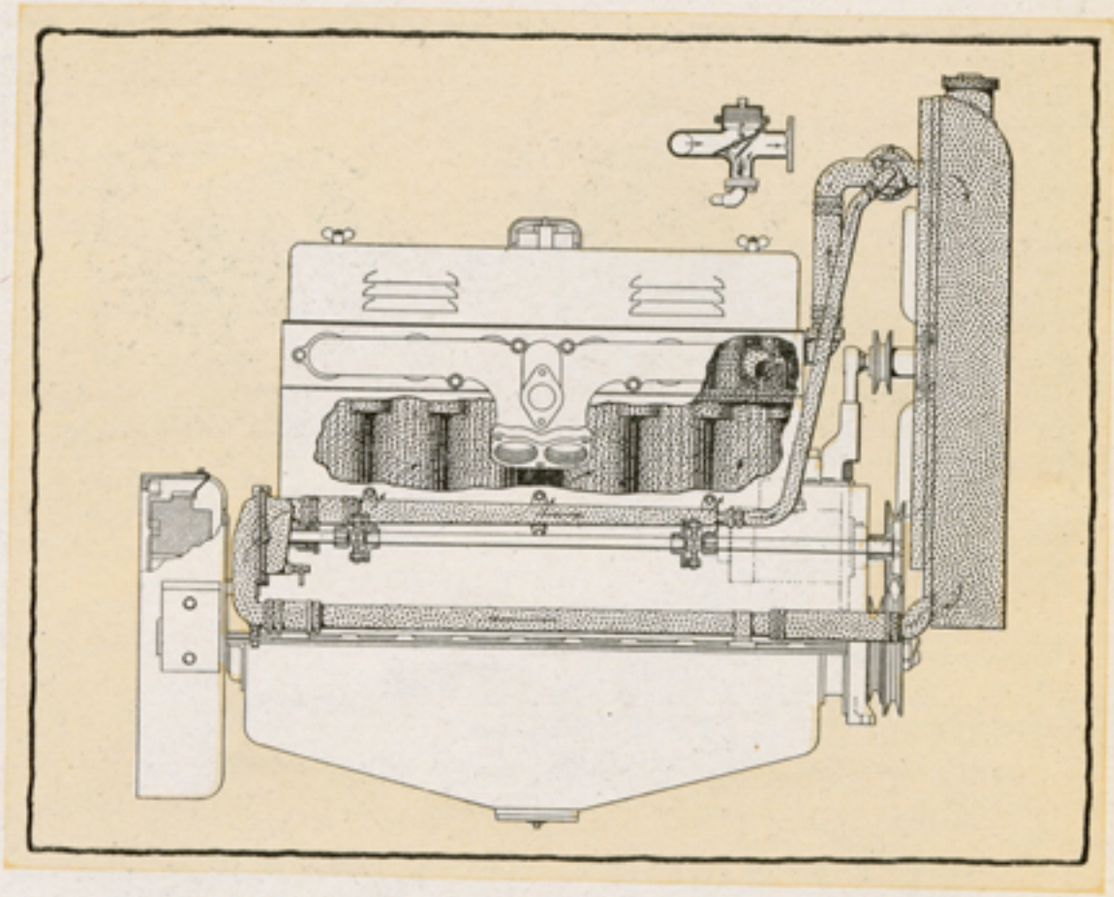
IMPELLER TYPE CIRCULATING WATER PUMP

Showing the two halves when opened up

link "V" belts from the front end of the crankshaft. This type of belt drive has the same advantages, inherently, that a small flywheel vibration dampener would have if applied to the front end of the crankshaft. The belts hardly show wear after more than 10,000 miles of use.

The impeller type water pump has many advantages. It insures adequate water circulation at low speeds; keeps down excessive circulation at high speeds, which would tend to empty the water cooling system, and, in case anything happens to the pump drive, permits thermo-syphon circulation, which is adequate for any reasonable kind of driving.

DJP WORKS OF HISTORICA CONNERSVILLE IN



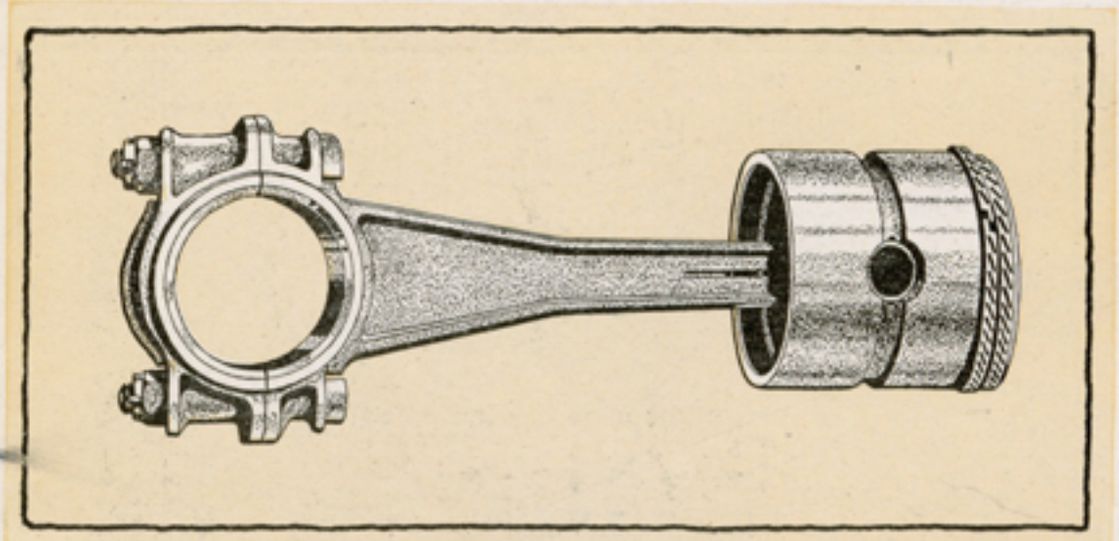
DIAGRAMMATIC SKETCH OF COOLING SYSTEM
Showing thermostatic control of temperature

CONNECTING RODS

The connecting rod and piston assembly is unique on account of the rod design and the light weight. Pistons are cast iron with two rings. The big end of the connecting rod has the bushing cast directly in it, a method that has been found to give longest life.

The pistons are exceptionally light for cast iron, having one-sixteenth-inch walls, thus greatly helping to eliminate vibration.

DJP WORKS OF HISTORICA CONNERSVILLE, IN



PISTON AND CONNECTING ROD ASSEMBLY

Showing "spade" type rod and two-ring piston

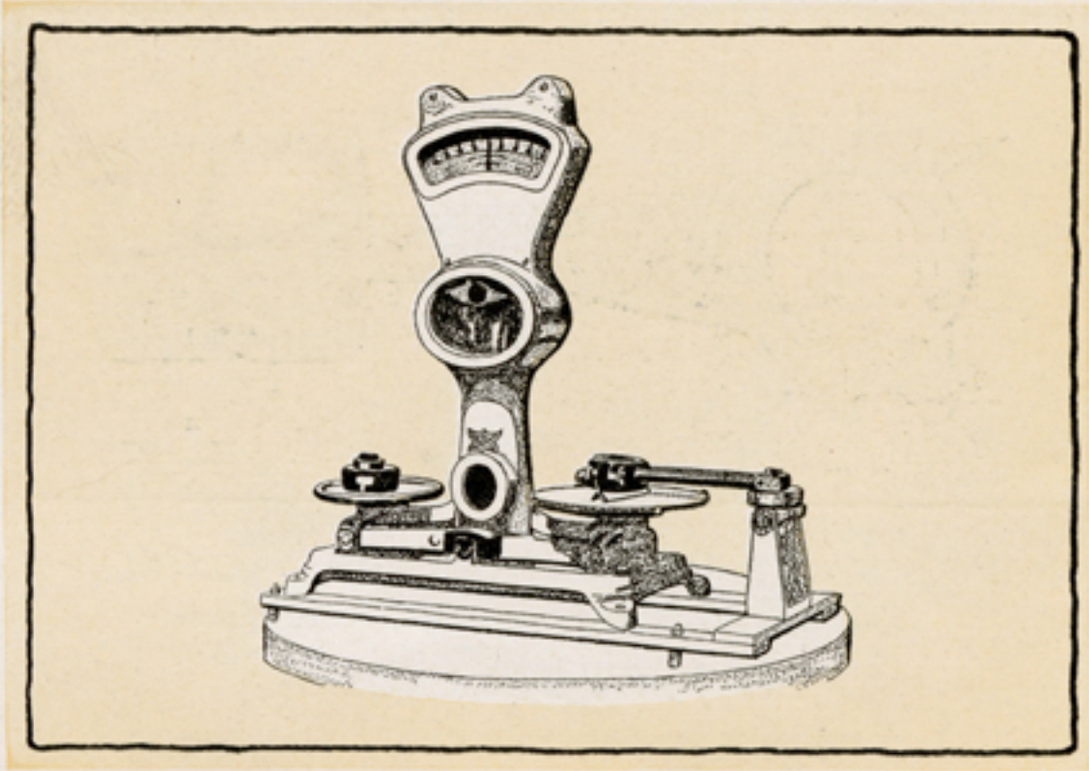
PERFECT BALANCING

Very few motors can claim noiseless and vibrationless operation over their whole speed range, especially if it goes above 2,000 revolutions per minute. The Ansted Engine exceeds 3,000 r. p. m., when at top speed on the road, yet, on account of the care in building and assembling, it is perfectly smooth in operation.

Three things are essential in the perfection of motor balance: the uniformity of weight and the balance of reciprocating parts; the perfect static and dynamic balance of the crankshaft, and the balance of the flywheel.

The reciprocating parts include the connecting rod and piston assembly. All the pistons must be the same weight, only one-tenth-ounce variation being permitted in the selection for assembly. On account of the increase in size of the big end of the rod it is

DJP WORKS OF HISTORICA CONNERSVILLE IN

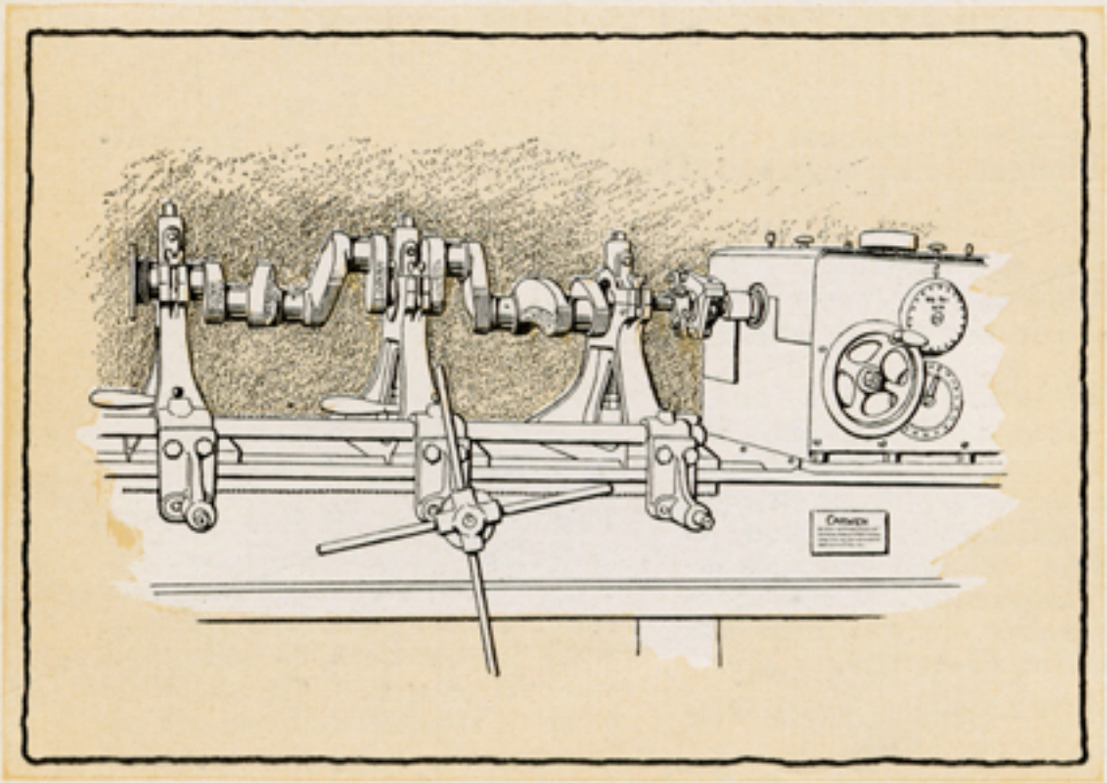


SENSITIVE SCALES ON WHICH EVERY CONNECTING ROD IS BALANCED

also essential to see that the ends are of uniform weight. This is done on the special machine illustrated in the sketch above.

Crankshafts have to be balanced statically to insure that the weight is uniformly distributed around the axis of the shaft, and then dynamically, or in "running balance," to be sure that the weight is uniformly distributed from end to end. Unless this is done, the motor can not be vibrationless at all speeds. A special Carwen "running balance" machine is used, and the variation of less than one-tenth ounce is easily detected and eliminated. The same care is also given to the accurate balancing of all the flywheels.

DJP WORKS OF HISTORICA CONNERSVILLE, IN



ALL CRANKSHAFTS MUST PASS A RUNNING BALANCE TEST

THE COMPLETE ENGINE

The complete unit is without a peer in performance, accessibility, and long life for an engine of its piston displacement. You may inspect every overhead valve engine but you will fail to find one which gives as much power and economy for its size, and yet is quiet. We invite comparison with any engine of no matter what size for general all-around performance, efficiency, speed range, carburetion, long life, and accessibility, feeling that you will be thus convinced of the very superlative merit of the Ansted Engine.

DJP WORKS OF HISTORICA CONNERSVILLE, IN.

SERIES "T" SPECIFICATIONS

AXLES—Front: I-beam section drop-forging. Rear: full-floating. Final drive through spiral bevel gears.

BRAKES—Service brake: external contracting on 16-inch drums of rear wheels. Operated through strong but flexible steel cable and perfectly equalized. Emergency brake: external contracting at rear of transmission case—the "one-finger" brake!

CARBURETION—Intake and exhaust manifolds are combined into unit so that gas enters the manifold by passing over Lexi-gasifier, which is heated by exhaust gases, making it impossible for unvaporized gasoline to get into the combustion chambers.

CLUTCH—Dry multiple disc type, softly engaging.

COOLING—Cellular radiator in conjunction with impeller type water pump and fan.

ENGINE—Six cylinders cast en bloc with removable head. Bore, 3¼ inches; stroke 4½ inches. Upper half of crank case cast with cylinders; lower half pressed steel. With a total piston displacement of 224 cubic inches, and an S. A. E. rating of only 25.4 horse power, the engine actually develops 70 horse power, at 3000 revolutions per minute.

FRAME—Z-section, of 22-point carbon steel. Wide running boards are bolted to side rails making an integral unit, and eliminating 100 parts.

IGNITION—Vertical distributor integral with engine, with storage battery of large capacity floating in the line.

LIGHTING—Vacuum-controlled 2-Way Head Lamps give full light at all times.

PROPELLER SHAFT—Seamless nickel steel tubing, 1¼-inch diameter, with flanges electrically welded. Fitted with fabric discs to take universal action. These joints eliminate noise and require no lubrication, being non-metallic.

SPRINGS—Front: semi-elliptic, 34x2 inches. Rear: semi-elliptic, 56x2 inches.

STARTING—High speed electric motor engages with gear on flywheel through screw shaft and pinion.

STEERING—Irreversible worm and gear. Only grease cup on car is on steering gear.

TIRES—Four cord tires are regular equipment. Front and rear, 32x4½ inches.

TRANSMISSION—Selective sliding type with shift lever in center at driver's right.

WHEELBASE—One hundred and twenty-eight inches.

WHEELS—Heavy artillery type with steel felloe bands.

WIRING—Single wire system with all circuits protected by fuses and heavy armored cable.

DJP WORKS OF HISTORICA CONNERSVILLE, IN

EXPRESS PRINTING COMPANY
CONNERSVILLE, INDIANA

DJP
WORKS OF HISTORICA
CONNERSVILLE, IN

DJP
WORKS OF HISTORICA
CONNERSVILLE - IN